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ABSTRACT

This study examined the impact of various temporal patterns of maternal interactive behavior with their infant on the infant's quality of attachment. The sample consisted of 52 dyads from the Berlin Longitudinal Study of Early Adaptation. Quality of attachment was assessed at 21 months with the Strange Situation Procedure. Nine infants were classified as securely attached: they sought and enjoyed psychological intimacy; 16 as insecure-defended: they avoided intimacy; and 19 as insecure-coercive: they displayed alternately angry and disarming behavior, thus maintaining their mothers' attention; 8 could not be classified. Maternal interaction quality was assessed from videotaped interactions at 3, 6, 9, 12, and 18 months, and the following components of maternal interaction were weighted: (1) sensitive; (2) covertly controlling; (3) hostile controlling; and (4) unresponsive. Prediction analysis was used to determine the association of maternal interaction patterns with later quality of attachment. Results suggested that a recent experience of maternal sensitivity seemed to be of more impact than a more continuous experience. Sensitive mothers seemed to be able to provide continuously "good enough" care but also improved in their behavior over time. Mothers of defended children were primarily characterized by covertly controlling behavior displayed continuously, but with improvement. Mothers of insecure-coercively attached infants had a strong component of unresponsive and/or hostile behavior as a nearly continuous pattern over the first 18 months. Unresponsive and/or hostile behavior, especially at the beginning of the mother-infant relationship, seemed to be of additional impact for later insecure-coercive attachment quality. (KDFB)

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Quality of Attachment and Continuity or Discontinuity in Maternal Sensitivity over the Infant's First Two Years

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Introduction

The present study analyzes the impact of maternal behavior in interaction with the infant on the infant´s quality of attachment at the end of the second year of life.

Maternal behavior is characterized, at each of the five times of assessment, as a pattern of sensitive, controlling, and unresponsive components. In this presentation, the temporal or diachronic pattern of maternal behavior is analyzed.

It is assumed that preponderance of the sensitive component in the interaction at each time and over time is decisive for the infant to develop a secure attachment relationship (B).

It is further assumed, that the two qualities of insecure attachment (A=insecure avoidant/defensive vs C= insecure-ambivalent/coercive) can be differentiated by qualitatively different compositions of maternal behavior.

For infants to develop an A-pattern of attachment, mothers are supposed to use controlling behavior from early on.
For infants to develop a C-pattern of attachment, unresponsive and hostile components are supposed to interchange with less aversive components, constituting a specific discontinuous pattern of maternal behavior.

Assumptions

I. Specific diachronic patterns of maternal behavior during the first 18 months **differentiate between secure and insecure attachment** at 21 months (B vs non-B patterns of attachment).
Three alternatives:

1. **Continuity hypothesis:**
   Securely attached (B-pattern) children have mothers who displayed a pattern of predominantly sensitive interactive behavior at all assessments (3, 6, 9, 12 and 18 months).
2. **Recency hypothesis**:
   Securely attached children have mothers who displayed sensitive behavior primarily close in time to the assessment of attachment (at 12 and 18 months).
3. **Primacy hypothesis**:
   Securely attached children have mothers who displayed sensitive interactive behavior primarily in the first months of the infant´s life (at 3 and 6 months).

II. Diachronic patterns of maternal interaction during the first 18 months **differentiate between the two types of insecure attachment.**

A-pattern of attachment: Insecure-defended attachment quality:

1. **Continuity hypothesis**:
   Insecure-defended children (A-pattern) have mothers who displayed a pattern of predominantly covertly controlling interactive behavior at all assessments (3, 6, 9, 12 and 18 months).
2. **Recency hypothesis**:
   Insecure-defended children attached children have mothers who displayed covertly controlling behavior close in time to the assessment of attachment (at 12 and 18 months).
3. **Primacy hypothesis**:
   Insecure-defended children attached children have mothers who displayed covertly controlling interactive behavior primarily in the first months of the infants life (at 3 and 6 months).

C-pattern of attachment: Insecure-coercive attachment quality:

Continuous-discontinuity hypothesis:

Insecure-coercive children (C-pattern) have mothers who displayed a pattern of interaction that alternates between unresponsive and/or hostile behavior and less aversive behavior components at all periods of assessment.

Figure 1: Diachronic Differentiation of Maternal Behavior With Respect to A, B, C Patterns of Attachment at 21 Months (Classification according to the Preschool Assessment of Attachment)

- Research Assumptions -

Age in Months		3	6	9	12	18	21
Hypothesis:		**Maternal Behavioral Components**					**Attachment Quality**
I. Prediction of B vs. non-B patterns of attachment							
B-Pattern	1. Continuity hypothesis	———	———	sensitive-	———	——→	→B
	2. Recency hypothesis				sensitive------→		→B
	3. Primacy hypothesis	sensitive------→					→B
II. Prediction of A- vs. C-patterns of insecure attachment							
A-pattern:	1. Continuity hypothesis	———	———	coverly controllin g	———	——→	→A
	2. Recency hypothesis				coverly controlling—→		→A
	3. Primacy hypothesis	coverly controlling——→					→A
C-pattern:	1. Continuous-discontinuity hypothesis	———	———	unrespon-sive and/or hostile	———	——→	→C

Sample

The original sample (Berlin Longitudinal Study on Early Adaptation) includes 76 mother-child dyads. For technical reasons (incomplete longitudinal data) 24 dyads were omitted with N=52 dyads remaining for the diachronic analysis. The distribution of attachment in this reduced sample was: B=9; A=16; C=19; others=8.

Table 2: Demographic Characteristics of the Sample (N=52 Dyads)

		N	%
Sex:	Girls	26	50%
	Boys	26	50%
Birth order:	First -born	30	57.7%
	Later-born	22	52.3%
Familiy living arrangement:	Family	46	88.5%
	Only mother and child	6	11.5%
Maternal educational level:	Below 10th grade	9	17.3%
	Qualified 10th grade	22	42.3%
	University entrance level	21	40.4%

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Variables

Quality of attachment:

was assessed from the Ainsworth **Strange Situation Procedure** (Ainsworth, Blehar, Waters & Wall, 1978) at **21 months** and classified according to the Preschool Assessment of Attachment (PAA) by Crittenden (1993), which elaborates on the Ainsworth system by considering the developmental progress from infancy to early childhood. Children are classified as **secure (B)** if they seek and enjoy psychological intimacy with the attachment figure and communicate with her their plans, as **insecure-defended (A)** if they avoid psychological intimacy with the attachment figure, **insecure-coercive (C)** if they display alternately angry and disarming behavior, thus maintaining pervasive attention of the attachment figure.

Quality of maternal interactional pattern:

was assessed from videotaped three minutes of half-structured play interaction of mother and infant at 3, 6, 9, 12, and 18 months.The mother was instructed to get the child interested in a "boring" toy (a wooden block, or a cloth) offered to her by the project co-worker. Maternal and infant behavior were scored using the **Care-Index** (Crittenden, 1988). Only the mother´s scores are focussed in this presentation. In this system 14 points are distributed over four scales of maternal behavior in such a way that they characterize the relative weights of these components of maternal interactive behavior.

These components are:

1. **Sensitive** component:
   the mother adjusts to the infant. They time their turns on basis of the infants´ signals.
2. **Covertly controlling** component:
   the mother appears to be affectionate but is not in synchrony with the infant ("pseudo-sensitive")
3. **Hostile controlling** component:
   the mother expresses anger or frustration towards the infant.
4. **Unresponsive** component:
   the mother appears to be withdrawn and uninterested in the interaction with the infant.

The scores for each component of maternal behavior were dichotomized at or close to the median of that particular scale so that the maternal behavior at each assessment could be characterized by 1/0 patterns, e.g. 1000= primarily sensitive, 1010=sensitive as well as hostile-controlling components.

Data Analysis

The maternal patterns were submitted to a longitudinal analysis. A totally continuous diachronical pattern for e.g. the sensitive component over the 5 assessments would be coded as "11111". A pattern of "11000" would indicate a mother presenting this dominant behavior component only in the first two assessments.

Prediction analysis* was utilized to determine the association with later quality of attachment.

*** Prediction analysis** (DEL-analyses, Hildebrand, Laing, & Rosenthal, 1977) is derived from chi-square analysis and is employed to assess the accuracy of predicted patterns of covariation. The proportional reduction in error (DEL) describes the extent to which errors are avoided in the observed as compared to the chance distribution by introducing an expected frequency distribution based on a theoretical model.

Results

Figure 2: Examples of Hits and Miss Patterns for each Kind of Hypothesis

Months					Kind of Hypothesis				
3	6	9	12	18	3 assessment	4 assessment	5 assessment	primary	Recency
0	0	0	0	0	miss	miss	miss	miss	miss
0	0	0	1	1	miss	miss	miss	miss	**hit**
0	0	1	1	1	**hit**	miss	miss	miss	**hit**
0	1	1	1	1	**hit**	**hit**	miss	miss	**hit**
1	1	0	0	0	miss	miss	miss	**hit**	miss
1	1	1	1	0	**hit**	**hit**	miss	**hit**	miss
1	1	1	1	1	**hit**	**hit**	**hit**	**hit**	**hit**

I Prediction of Secure (B) vs Insecure Attachment from Diachronic Patterns of Maternal Sensitivity

Table 1: Prediction Analyses: Prediction of Infants with Secure (B) Attachment Quality

Diachronic Patterns of Interaction						Results of Prediction Analyses			
Months									
3	6	9	12	18	Observed Frequency N=9		Patterns in Congruence with the Continuity Hypothesis (3/5)	Patterns in Congruence with the Primacy Hypothesis (2/5)	Patterns in Congruence with the Recency Hypothesis (2/5)
0	0	0	0	0	1	**Number of Assessments Included in the Analysis**	5	2	2
0	1	0	1	1	2	**DEL: Error Reduction**	**25%**	20%	**38%**
1	1	0	1	1	1	**z-value**	**1.69**	92	**1.83**
1	1	1	1	1	5	**p(z)**	**.004**	127	**.003**

Recent experience of maternal sensitivity (i.e. experience at 12 and 18 months) seemed to be of higher impact for secure attachment than was early experience (i.e. at 3 and 6 months). Total continuity (5 out of 5 assessments) was not significantly predictive. Recent experience resulted in the highest predictability, followed by prediction from 3 out of 5 assessments, characterizing a "relative continuity".

II Prediction of Insecure-Defended Attachment (A) from Diachronic Patterns of Covertly Controlling Maternal Behavior

Table 2: Prediction Analyses: Prediction of Infants with Insecure-Defended (A) Attachment Quality

Diachronic Patterns of Interaction						Results of Prediction Analyses			
Months									
3	6	9	12	18	Observed Frequency N=16		Patterns in Congruence with the Continuity Hypothesis (4/5)	Patterns in Congruence with the Primacy Hypothesis (2/5)	Patterns in Congruence with the Recency Hypothesis (2/5)
0	0	0	1	1	2	**Number of Assessments Included in the Analysis**	5	2	2
0	1	0	0	0	1	**DEL: Error Reduction**	**33%**	15%	15%
0	1	0	0	1	1	**z-value**	**1.87**	.94	.95
0	1	1	0	1	1	**p(z)**	**.003**	.171	.170
1	0	0	0	0	1				
1	0	1	1	1	1				
1	1	0	1	0	1				
1	1	1	0	1	1				
1	1	1	1	0	2				
1	1	1	1	1	4				

For insecure-defended (A) infants, the continuity hypothesis best represented the empirical data. A strong continuity (4 out of 5 assessments) was better predictive than was a weaker continuity (3 out of 5 assessments) or total continuity. Continuous experience of covert-controlling behavior by the mother appears to prepare for an avoidant/defended quality of attachment.

III Prediction of Insecure-coercive (C) Attachment from Diachronic Patterns of Unresponsive and/or Hostile Maternal Behavior

Table 3: Prediction analysis: Prediction of Infants with Insecure-Coercive (C) Attachment Quality

Diachronic Patterns of Interaction						
Months						
3	6	9	12	18		Observed Frequency N=19
0	1	0	1	1	1	1
1	0	0	1	0	1	1
1	0	1	1	1	1	1
1	1	0	1	1	1	1
1	1	1	0	1	1	2
1	1	1	1	0	1	1
1	1	1	1	1	1	12

Results of Prediction Analyses			
	Patterns in Congruence with the Continuity Hypothesis (4/5)	Patterns in Congruence with the Primacy Hypothesis (2/5)	Patterns in Congruence with the Recency Hypothesis (2/5)
Number of Assessments Included in the Analysis	5	2	2
DEL: Error Reduction	**23%**	**21%**	14%
z-value	**1.96**	**1.70**	1.06
p(z)	**.002**	**.004**	.142

Insecure-coercively attached children had mostly mothers with an interaction pattern including unresponsive and/or hostile behavior as major components. Continuity of this "discontinuous" maternal interactive behavior over 4 out of 5 assessments represented best the empirical data. Moreover, and in contrast to the hypothesis, also primacy experience (at 3 and 6 months) of this maternal style seemed to be of impact for later insecure-coercive attachment quality.

Summary

Table 4: List of Results of Prediction Analyses Utilized

	Kind of Hypothesis				
Attachment Quality	Continuity: 5 out of 5 Assessment	Continuity: 4 out of 5 Assessment	Relative Continuity: 3 out of 5 Assessment	Primacy Hypothesis	Recency Hypothesis
I. Secure	Del=34% z=1.25 p(z)=.105	Del=19% z=.91 p(z)=.180	**Del=25% z=1.69 p(z)=.004**	Del=20% z=.92 p(z)=.127	**Del=38% z=1.83 p(z)=.003**
II. Insecure-Defended	Del=.5% z=.24 p(z)=.403	**Del=33% z=1.87 p(z)=.003**	**Del=25% z=1.93 p(z)=.002**	Del=15% z=.94 p(z)=.127	Del=15% z=.95 p(z)=.170
III. Insecure-Coercive	Del=13% z=.90 p(z)=.18	**Del=23% z=1.96 p(z)=.002**	Del=.4% z=.411 p(z)=.340	**Del=21% z=1.70 p(z)=.004**	Del=14% z=1.06 p(z)=.142

As hypothesized, secure attachment quality at 21 months was related to sensitive maternal behavior during the infant´s first 18 months of life. Recent experience of maternal sensitivity (i.e. at 12 and 18 months), however, seemed to be of more impact than an even more continuous experience of at least 3 or more out of 5 assessments. Apparently, sensitive mothers seemed to be able not only to provide a continuously good-enough care for their infants, but also to improve in their behavior over time and to adapt to their infant´s changing developmental needs and competencies.

Mothers of defended children (A) were primarily characterized by covertly controlling behavior displayed continuously from early to later infancy, and without "improvement" over time.

Mothers of insecure-coercively attached infants (C) differed from those of A-infants by a strong component of unresponsive and/or hostile components of behavior, as a nearly continuous experience of the infant over the first 18 months of life. Moreover, unresponsive and/or hostile maternal behavior, particularly at the beginning of the infant-mother relationship, seemed to be of additional impact for later insecure-coercive attachment quality.

Insecure attachment of both qualities thus refers to highly continuous experience of insensitive or aversive maternal behavior, but of different qualities.
Secure attachment, in contrast, appears to be related to more or less pervasive sensitive experience with the mother, and particularly to recent experience.

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